From Home Energy (based on ASTM E1554)
Appendix A. Step-by-step instructions for performing the DeltaQ test.

1. Connect the blower door to the building envelope using a window or door opening.
2. Install an envelope pressure difference sensor. The outside pressure measurement location should be sheltered from wind and sunshine. The inside pressure measurement location should be as far away as possible from the localized air flows induced by the air moving apparatus. All the envelope pressures use the outside pressure as the reference.
3. With the blower door opening blocked, air moving fan off and air handler fan off measure pressure difference across envelope with blower door off ΔP_{zero}.
4. With the air handler fan off, turn on the blower door and adjust the flow until there is 5 Pa (0.02 inches of water) envelope pressure difference, with the house at a higher pressure than outside (for pressurization testing). Record the envelope pressure difference (ΔP_{env}) and flow (Q_{off}) through the air-moving device at this pressure station. Only record pressure and flow readings when the pressure reading is within 0.5 Pa (0.002 inches of water) of the 5 Pa (0.02 inches of water) operating point. It is recommended that multiple pressure and flow readings are recorded at each operating point and averaged for use in the calculation procedure. The ΔP_{zero} offset pressure shall be added to all target pressures. For example, if ΔP_{zero} is 2 Pa, then the first target pressure for pressurization is 7 Pa and –3 Pa for depressurization. All the air-moving device flows are positive out of the house and negative if into the house.
5. Repeat step 4, but with the envelope pressure difference, ΔP_{env}, incremented by 5 Pa each time until the envelope pressure difference is 50 Pa. Record the envelope pressure difference with the air handler fan off, ΔP_{off}, for each pressure station. Because the tightness of the building and the weather conditions affect leakage measurements, the full range of the higher values may not be achievable. In such cases substitute a partial range encompassing at least ten data points, with the size of pressure increments suitably adjusted. At each pressure station, the air handler fan on and off conditions must both have the same target pressure.
6. Turn on the air handler fan and repeat the measurements in steps 4 and 5, recording Q_{on} and ΔP_{on} at each pressure station.
7. Repeat step 6, but with the house depressurized, i.e., for the first point, adjust the flow through the air-moving device until there is a -5 Pa envelope pressure difference, with the house at a lower pressure than outside.
8. Repeat step 7, but with the air handler fan off.

Calculations:

1. Subtract ΔP_{zero} from the measured envelope pressures at each pressure station (ΔP_{env}) to determine the corrected envelope pressures (ΔP).
2. Determine the envelope leakage coefficient and pressure exponent, n_{env}, by fitting the air handler fan off pressure and flow data to the power law function using the same analysis as for house pressurization leakage testing in ASTM E779.
3. Adjust the flows to exactly match pressures. The measured flow with the system off is corrected to the flow at the same pressure as when the system is on at each pressure station, using Equation A1.

$$Q_{off,corrected} = Q_{off}\left(\frac{\Delta P_{on}}{\Delta P_{off}}\right)^{n_{env}} \quad \textbf{(1)}$$

4. Calculate the flow difference (ΔQ) at each pressure station by subtracting $Q_{off,corrected}$ from Q_{on}.
5. Do a least squares fit of the ΔP and ΔQ pairs from each pressure station to Equation (A2) to determine supply leakage (Q_s) and return leakage (Q_r), and the characteristic pressures (ΔP_s and ΔP_r). Note that some of the pressure ratios (and 1± the pressure ratios) will be negative. In these cases take the absolute value to the power 0.6 in Equation (A2) and carry the sign outside the exponent term.

$$\Delta Q(\Delta P) = Q_s\left[\left(1+\frac{\Delta P}{\Delta P_s}\right)^n - \left(\frac{\Delta P}{\Delta P_s}\right)^n\right] - Q_r\left[\left(1-\frac{\Delta P}{\Delta P_r}\right)^n + \left(\frac{\Delta P}{\Delta P_r}\right)^n\right] \quad \textbf{(2)}$$